CHAPTER 1.
INTRODUCTION

1.1 PURPOSE AND PROJECT DESCRIPTION

King County recently expanded the service area of its surface water utility to much of the rural area of the County. The County is committed to providing a comprehensive surface water program in these new areas. This rapid rural reconnaissance report provides a general overview of the existing stream and basin conditions, problems, and identifies high priority capital improvements and opportunities related to surface water in the Boise Creek drainage basin.

1.2 STUDY AREA

The Boise Creek Basin covers 9,861 acres (15.4 square miles) in southeast King County, Washington. It includes a portion of the City of Enumclaw and areas to the east, as shown in Figure 1-1. Boise Creek (WRIA #10.0057) is approximately 12.2 miles long and flows into right bank of the White River (WRIA #10.0031) at river mile (RM) 23.3 south of Enumclaw. The White River becomes the Puyallup River (WRIA #10.0021) and flows into Puget Sound at Commencement Bay in the City of Tacoma.

The elevation of the Boise Creek Basin varies from about 630 feet in the west to over 3,900 feet in the east. Under existing (2001) land use conditions, the basin is 35 percent till, 23 percent bedrock, 35 percent outwash, and 7 percent impervious surface.

1.3 PROJECT GOALS

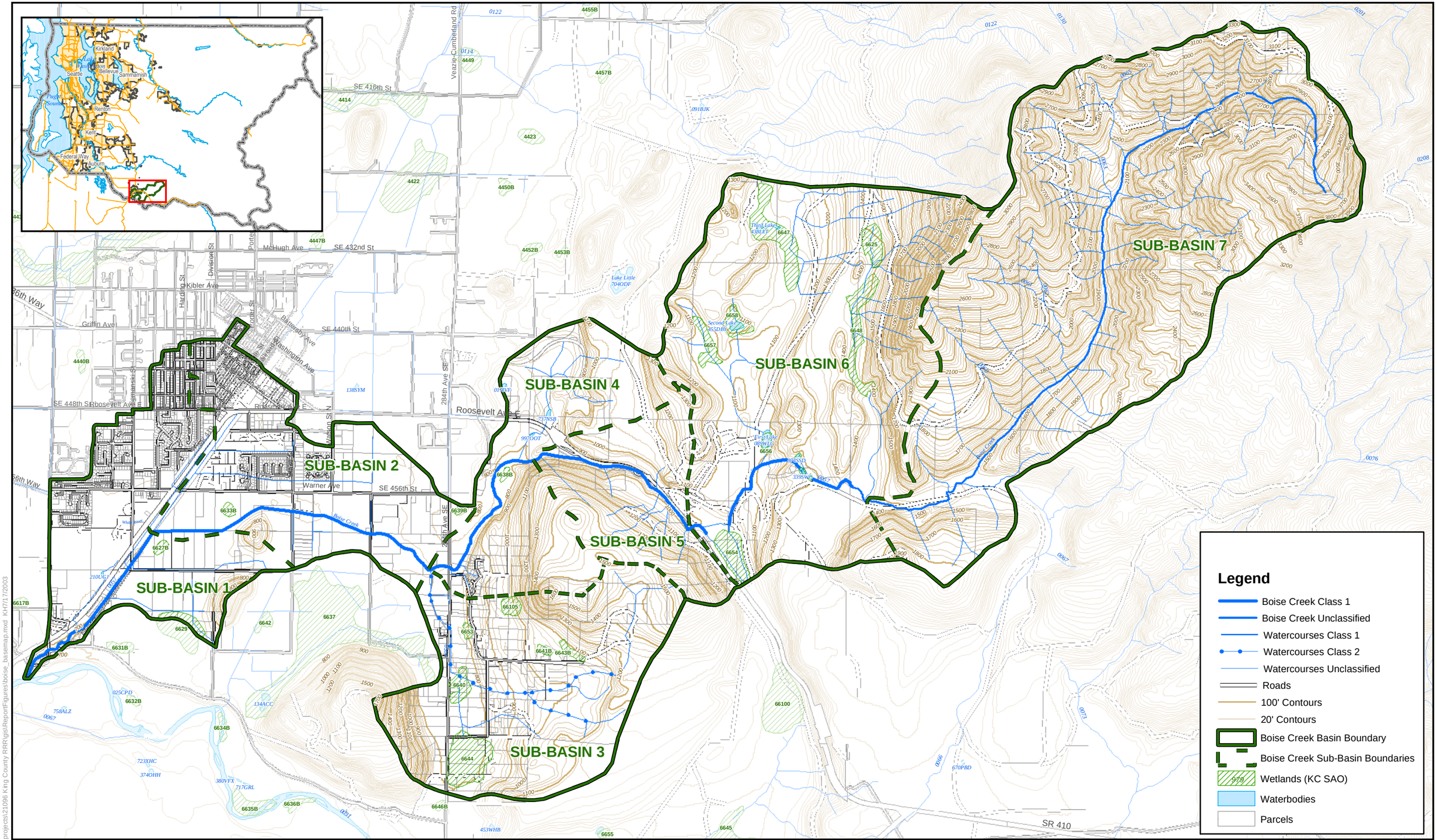
The Boise Creek rapid rural reconnaissance report has two goals:

- **Characterization**—To produce a rapid, systematic inventory and analysis of stream conditions and drainage systems, covering resources and problems under both current and future land uses. Each subbasin is to be ranked, classified as "impacted," "sensitive," or "not supporting (cannot support a diverse stream community)," and identified as "restorable" or not, using definitions from *Watershed Vulnerability Analysis* (Center for Watershed Protection 2002). A complete description of the Vulnerability Analysis is included in Appendix E.
- **Action Plan**—To identify high-priority management needs in the study area and to recommend programs for surface-water and habitat management.

1.4 PROJECT APPROACH

1.4.1 Characterization

The intent of the rapid rural reconnaissance is to describe ecological stream basin conditions through a thorough analysis of all available data for the basin. Using methods outlined in *Watershed Vulnerability Analysis*, the characterization analysis describes the



King County
Department of Natural Resources and Parks
Water and Land Resources Division

Map prepared for King County by Adolfson Associates, Inc. The map data shown are the property of the sources listed below. Inaccuracies may exist, and Adolfson Associates, Inc. implies no warranties or guarantees regarding any aspect of data depiction.

Source:
King County GIS, 2002; WSDOT 2002; WDNR

1:35,000

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BOISE CREEK DRAINAGE BASIN
KING COUNTY RAPID RURAL RECONNAISSANCE
Figure 1-1

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hydrologic, geomorphic, and ecological processes that affect habitat and create surface water problems in each subbasin. The characterization identifies significant resource areas that contribute to ecosystem health, including open space and other highly functioning ecological areas. The characterization identifies significant flooding, water quality, erosion and aquatic resource problems. It also attempts to project the likely future conditions of the basin. For the Boise Creek Basin, the characterization used available information and a limited amount of newly collected additional data. Table 1-1 summarizes the main elements of the characterization process.

TABLE 1-1.
MAIN ELEMENTS OF THE BASIN CHARACTERIZATION PROCESS

Compile Existing Data	Analyze and Interpret Data	Develop Report
Remote Data Aerial photography GIS Data sets Classified Land Cover Public Lands Sensitive Areas Mapping Field Data Stream Typing Rain Gage Data Stream Gage Data Complaint Records Ambient Water Quality Data Published Reports Interviewed County staff, other Agencies, Citizens	▪ Conduct hydrologic analysis ▪ Calculate impervious surface areas ▪ Analyze existing data ▪ Review published reports ▪ Analyze remote and field data ▪ Analyze existing reports and data on major private and public development projects ▪ Analyze complaint records ▪ Conduct air photo analysis of land use and habitat conditions. ▪ Conduct targeted field inspections of likely aquatic habitat and surface water problems.	• Description of important hydrologic, geomorphic and ecological processes affecting basin • Description of significant resource areas and habitat functions warranting protection • Description of significant surface water problems warranting remediation • Description of likely future basin conditions

1.4.2 Action Plan

The action plan identifies capital projects that will reduce risks posed by surface water problems to human health and safety, rural infrastructure, personal property, and aquatic resources. The projects resolve surface water problems in a way that either maintains or improves aquatic habitats. Table 1-2 describes the general types of activities included in the action plan.

1.5 REPORT CONTENTS

This report is a reconnaissance level plan for the Boise Creek Basin. It characterizes the existing stream and basin conditions and describes capital improvements needed to reduce existing flooding, protect or improve water quality, protect or improve habitat, and improve the overall health of the basin.

Chapter 2 discusses land cover characteristics in the Boise Creek drainage basin and their effects on hydrology and habitat. Chapter 3 analyzes basin hydrology for pre-development, existing (2001), and future conditions. Chapters 4, 5, 6, and 7 discussed the basin's

geomorphology, water quality, stream habitat, and drainage/erosion impacts and needs. Chapter 8 discusses the hydrology, geomorphology, and ecological processes affecting the Boise Creek Basin and likely future impacts. Chapter 9 discusses the projects that have been identified and provides a recommended action plan.

TABLE 1-2.
TYPICAL ACTIVITIES INCLUDED IN ACTION PLAN

Description	Purpose	Typical Examples
Restore ecosystem processes	Restore natural flows and sediment regimes to alleviate downstream problems and improve system-wide habitat conditions.	▪ Protect or acquire significant open space contributing to ecosystem health (e.g., headwater wetlands, groundwater recharge areas, and riparian areas). ▪ Reduce impervious surfaces and cleared, compacted lands. ▪ Protect and restore natural forest cover and topsoil depths. ▪ Improve infiltration of surrounding soils to mimic natural conditions by planting and other vegetation. ▪ Construct retention and detention ponds that correct water quality and flooding problems . ▪ Allow natural formation of alluvial fans.
Restore ecological connectivity	Restore fish passage and habitat through reconnection of isolated/fragmented environments.	▪ Remove or retrofit undersized or perched culverts, weirs, dams, etc. ▪ Restore riparian buffers. ▪ Prioritize levee removals ▪ Remove structures from within floodplains, alluvial fans and channel migration areas. ▪ Restore or create side channels.
Address problems where they are expressed on the landscape	Alleviate significant health and safety or aquatic habitat problems with substantial impact on the community.	▪ Stabilize or restore stream banks. ▪ Install or upgrade culverts ▪ Construct conveyance improvements. ▪ Retrofit facilities for retention and detention. ▪ Install storm drain lines.
Evaluation	Analyze the effectiveness of identified actions	